Climate Variability and Predictability Program (CVP)

Observing and Understanding Processes Affecting the Propagation of Intraseasonal Oscillations in the Maritime Continent Region

Decisionmakers are increasingly asking for accurate forecasts and predictions at timescales longer than traditional weather forecasts, especially at the sub-seasonal to seasonal timescale (30 to 90 days), for use in planning, prioritizing, and budgeting. Although there have been recent improvements in seasonal predictions, there are still many processes and sources of predictability, which could improve sub-seasonal to seasonal (S2S) skill, that are not well understood. For example, the Maritime Continent (MC) plays a pivotal role in global weather and climate. It connects the Indian and Pacific Oceans through both the atmosphere and ocean, and the tropics and higher latitudes through teleconnections. However, at times this region acts as a barrier for the propagation of the Madden-Julian Oscillation (MJO) and other intraseasonal variability. It is known that multi-scale, complex, and interactive processes of the ocean, atmosphere, and land are critical to controlling local variability and the global impact of the MC weather-climate system. However, these processes are poorly understood and inadequately represented in weather and climate models.

The Years of the Maritime Continent (YMC, July 2017 – July 2019), an international project with an overarching goal of “observing the weather-climate system of the Earth’s largest archipelago to improve understanding and prediction of its local variability and global impact” has been developed by US scientists and international partners.This field campaign has the potential to advance scientific understanding and prediction of climate and its impacts especially at the timescale of the weather and climate continuum. Better prediction of MJO, its propagation, and how it interacts with the Maritime Continent will help to improve weather and climate predictions, especially for the the development of accurate, accessible, authoritative, and timely climate information that enables decision making in our communities and in the private sector.

While global observing systems can routinely provide oceanic and atmospheric data, their low spatial resolution, sometimes sparse nature, and lack of subsurface ocean measurements often inhibit the ability to fully understand the processes of the climate and Earth system. Therefore, process-level observational field campaigns, which are a foundational element of the climate research, are needed. A recent National Academies report titled, “Next Generation Earth System Prediction: Strategies for Subseasonal to Seasonal Forecasts” (2016), states that the “Use long-record and process-level observations and a hierarchy of models ... to explore and characterize the physical nature of sources of predictability and their interdependencies and dependencies on the background environment and external forcing” are specifically needed to identify and characterize sources of S2S predictability, and to correctly represent these sources of predictability in S2S forecast systems.

In FY17, the Climate Variability and Predictability (CVP) Program solicits proposals that aim to improve understanding of processes that affect the propagation (speed, intensity, disruption, geographic placement) of intraseasonal oscillations in the Maritime Continent and broader region by using a combination of in situ and remote observations, data analysis, modeling, and/or theoretical understanding of local and remote processes.

The NOAA CVP Program expects to partner with the Office of Naval Research (ONR) and US CLIVAR agencies (NOAA, NSF, NASA, DOE) to leverage activities of the Propagation of Intra-Seasonal Tropical Oscillations (PISTON) Departmental Research Initiative. The NOAA CVP effort is expected to coordinate with the ONR PISTON effort, the NASA Cloud-Aerosol-Monsoon Philippines Experiment (CAMPEx), and YMC observational campaigns to augment these planned activities. It is expected that the CVP component of the overall joint effort will include ship-based process-level field observations as well as modeling experiments.

The core work in the proposal should be three years in length however, if well-justified, one additional year to allow for sufficient time for pre-cruise preparation or post-field analysis and modeling will be considered. Projects will start either in FY17 or FY18, depending on the needs of the project and the availability of funding.

Interactions, partnerships, or collaborations with NOAA laboratories and centers are encouraged.

Data Management Guidance
Responsible NOAA Official for questions regarding this guidance and for verifying accessibility of data produced by funding recipients: Sandy Lucas, sandy.lucas@noaa.gov

Data Accessibility: The CVP Program requires that public access to grant/contract-produced data be enabled in one of the following ways (select one):

- ❏ Funding recipients are planning to submit data to NOAA National Centers for Environmental Information (NCEI), which will provide public access and permanent archiving[1]. Point of Contact for NCEI is Nancy Ritchey (Nancy.Ritchey@noaa.gov)
- ❏ Data are to be submitted to an International Council for Science (ICSU) World Data System facility: https://www.icsu-wds.org/community/membership/regular-members)
- ❏ An existing publicly accessible online data server at the funded institution is to be used to host these data (describe in proposal).
- ❏ Data are to be submitted to a public data repository appropriate to this scientific domain (describe in proposal).
- ❏ Proposal may request permission not to make data publicly accessible (proposal to explain rationale for lack of public access, and if funded approval to be obtained from Responsible NOAA Official listed above).
- ❏ Archival of data at an established Cloud Computing facility, if cost effective and reliable

[1] NCEI supports the creation of adequate metadata and data ingest into long term repository holdings using tools such as Send2NCEI (www.nodc.noaa.gov/s2n, for small volume, one-time only data collections) and Advanced Tracking and Resource tool for Archive Collections or ATRAC (www.ncdc.noaa.gov/atrac, for recurring and/or large volume data collections).

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Technical recommendations:
The CVP Program requires the following data format(s), data access method(s), or other technical guidance:

- Data must be made available in a common machine-readable non-proprietary format with appropriate metadata and clear labels and descriptors. Use of netCDF is encouraged.
- Data should be available via public and discoverable data portals, as described above.
- At a minimum, investigators should plan to archive and make available modeling data used in producing any figures in publications from research supported by their grants, as well as data that support conclusions reached in papers or stated publically. Only those data which are necessary for demonstrating reproducibility of published results need be archived and made public unless otherwise required as part of the solicitation.
- In situ observational data collected during the field campaign should be made freely available to the public either 2 years after collection and validation or at the time of publication, whichever is sooner..
- Model data should be made available for at least 3 years after it is initially published or made otherwise publicly available.

Resources:
Proposals are permitted to include the costs of data sharing and/or archiving in their budgets within solicitation specified proposal cost limit. Proposed methods and approaches should use reasonable means to minimize data management costs.

Program Contact information:
For additional program announcement information, investigators should contact the following CVP Competition Manager:
Sandy Lucas (Sandy.Lucas@noaa.gov, 301-734-1253)
Letters of Intent should be submitted directly to the Competition Manager.